

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 18

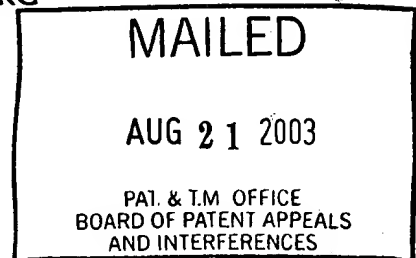
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte RICHARD TODD GOLDBERG

Appeal No. 2002-2070  
Application No. 09/085,298

ON BRIEF



Before OWENS, LIEBERMAN, and MOORE, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

REMAND TO THE EXAMINER

On consideration of the record, we find that this case is not ready for appeal and thus, we remand the application to the examiner for appropriate action.

The examiner has rejected the pertinent appealed claims as follows:

Claims 1 through 4, 7, 8 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Nozaki. Claims 5, 7, 9 and 10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Nozaki in view of Tseng.

In the restatement of the rejection in the Answer, the examiner found that Nozaki disclosed, "a method of forming a dielectric layer on a silicon containing structure (see FIGs. 2 and 3; col. 4, line 16 to col. 5, line 53) comprising the steps of: providing to a silicon containing structure, a gas including nitrogen; heating the silicon containing structure to an elevated temperature greater than 700° C (800° C or higher); and striking a plasma above the silicon containing structure to cause thermal nitridation of a portion of the silicon containing structure." See Answer, page 3. The examiner admitted that, "Nozaki et al. fails to specifically show the nitrogen gas also includes oxygen or wherein plasma stricken above the silicon containing structure also causes thermal oxidation of a portion of the silicon containing structure. However, since oxygen is present in the quartz tube, it would have been obvious to one having an ordinary skill in the art at the time the invention was made that the oxygen from the quartz tube would combine with the nitrogen gas resulting in a gas comprising a mixture of nitrogen and oxygen." Id. As properly stated in the section of the Answer directed to "Response to Argument," "[i]nherently, the oxygen from the quartz tube would incorporate with the nitrogen-containing gas resulting in a gas comprising a mixture of nitrogen and oxygen." See Answer, page 5.

Assuming arguendo, the correctness of the examiner's position, the appellant in his Reply Brief has argued that, "[t]here is no teaching from the Nozaki et al. reference or from extrinsic evidence that the oxygen contaminant of the reference is present in sufficient amount, or at the appropriate time in the process, or even in a chemically combinable or active form, to cause oxidation of the underlying silicon surface. For example, referring to

the disclosed Auger analysis in the reference,[] one can readily surmise that the amount of oxygen released from the quartz tube is insufficient to oxidize the silicon, or that the oxygen released from the quartz tube is produced too late in the process (i.e., after the silicon nitride is already formed) to reach and oxidize the silicon." See Reply Brief, page 3. Emphasis ours.

The claimed subject matter requires in part that the plasma cause thermal oxidation of a portion of said silicon-containing structure. See claim 1. The examiner however, has not had the opportunity to respond to the appellant's position that the oxygen may be formed too late in the process and subsequent to nitride formation by silicon or may be present in insufficient quantity as stated by the appellant supra.

Accordingly, with respect to each of the aforesaid rejections, the examiner should consider the position taken by the appellant and respond thereto by submission of appropriate supporting evidence, arguments and other data as the examiner sees fit. In this respect, the examiner is further directed to issue a Supplemental Examiner's Answer directed to the issues now present in the record before us. A Supplemental Examiner's Answer should include a complete statement of the examiner's views with regard to the amount of oxygen released from the quartz tube, the time in the process when the oxygen is released, whether prior to or subsequent to the formation of silicon nitride and whether the oxygen released results in thermal oxidation of a portion of said silicon-containing structure as required by the claimed subject matter.

Finally, the examiner is advised that the appellant must be given the opportunity to respond with a reply Brief in accordance with 37 CFR § 1.193(b)(1).

#### OTHER MATTERS

Both the examiner and the appellant discuss a reference to Wolf et al., "Silicon Processing for the VLSI Era," Vol. 1, p. 300. No copy of the reference is present in the record before us. Nor is there a determination of the date of the reference. A copy of this reference must be placed in the record and the publication date of said reference must be determined.

#### APPROPRIATE ACTION

We remand this application to the examiner for action consistent with the above.

As a final point, we emphasize that we have not considered the merits of any of the examiner's rejections. We will do so when the application is in condition for a decision on appeal.

REMANDED

**BOARD OF PATENT  
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AND  
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**PL:hh**

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